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SUBJECT: Apollo and Skylab Countdown and Test Integration Case 320/620

DATE: June 5, 1970

FROM: C. H. Eley, III

MEMORANDUM FOR FILE

Apollo 14 (AS-509)

1. Launch Vehicle Operations (LVO) at KSC plans to implement a 12-hours-on 12-hours-off crew work schedule for test integration activities. This may impact slightly previously published flow charts for pad test flow activities, including 28-day scrub turnaround activities.

2. The built-in hold schedule for the countdown now appears to be a one hour built-in hold at T-3.5 hours, a 9.5 hour built-in hold at T-9 hours and a 23 hour built-in hold at T-64.5 hours.

3. A change in the countdown may be required due to anticipated modifications in the CSM cryo tanks. Should the heaters be removed from the tanks, it will be necessary to load and topoff CSM cryogenics approximately 9 hours earlier in the countdown to allow time for natural heat leak to bring the tanks up to pressure. It is presently unknown what pressure will be selected, however, it will have to be well above the critical pressure of oxygen, 730 psia at -182°F (critical point), to assure a single phase fluid condition throughout the entire expulsion cycle. The critical point for hydrogen is 188 psia at -400°F.

SKYLAB

1. A Skylab medical requirement states that urine specimens must be in the urine freezer within 24 hours after launch. Due to the flight mechanics of orbital rendezvous for the Command Module and the Skylab, it appears that there would only be a single 15 minute SL-2 launch window every 4-5 days instead of a 15 minute launch window each day as previously considered. This requirement could impact KSC operations considerably because of the obvious launch-on-time implications and the lengthy separation between launch windows. KSC therefore would greatly desire to have multiple launch windows (e.g. every day) because the Saturn IB is not a vehicle which has previously been launched on time. It would also be going from a new complex with new GSE, operations, etc.; hence, KSC is less confident about their ability to meet the first launch window [redacted]

[redacted]

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2. In the event that the Orbital Work Shop (OWS)/ Saturn V must be returned to the VAB, a launch delay of up to 19 days can be expected depending on the point in the test flow that the return to the VAB occurs. It is emphasized that this is a success schedule (i.e. no problems involving serial repair time) and does not include any time spent in the VAB.

C. H. Eley, III

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